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5-1943 ★1943 INSECTICIDE-FUNGICIDE SUPPLY SITUATION

U.S. Department of Agriculture

1943

There are adequate facilities in the United States to produce all the insecticides we need. The supply of insecticides and fungicides, however, will depend on availability of raw materials and imports. It is expected that the supply will suffice to take care of our commercial crops and Victory Gardens. We will not have enough of certain preferred insecticides such as rotenone and pyrethrum to meet all demands, but through the appropriate use of extenders and substitutes, we should be able to protect crops from serious insect infestations.

Insecticides and fungicides are merely technical names for plant medicinals. When insect infestations occur it is necessary to have an adequate supply of the right medicinals on hand to control the epidemic. It is too late when the infestations occur to start manufacturing medicinals. They must be on hand.

From an economic point of view it appears that war agencies must recognize an obligation to farmers in assuring supplies of essential chemicals. After a farmer invests in land, seed, fertilizer and labor to bring a crop into existence, it would appear that every effort should be made to supply the chemicals needed to protect the crop against insect infestation. The availability of chemicals means greater farmer income, but most important of all, it means bigger and better crops for our war effort.

Rotenone

Before our entry into the war about 60 percent of the supply of rotenone roots came from the East Indies. Immediately after Pearl Harbor, trade agreements were negotiated with Peru and Brazil to encourage the production, collection and exportation to us of rotenone bearing roots such as timbo, cube and barbasco. As a result of these agreements we have witnessed a steady flow of material from the other Americas but the supply has been inadequate. It is well to remember that in 1941 we used about 8,500,000 pounds of rotenone roots. In 1942, owing to restrictions in Conservation Order M-133, we used about 6,500,000 pounds.

This year it is estimated that close to 3,000,000 pounds will be available to meet the requirements of the crops and uses as set forth in amended M-133. It is fully expected that the primary responsibility of the War Production Board and the Food Production Administration to meet these requirements will be met. It is also likely that a slight surplus may exist to take care of requests for relief, particularly for asparagus and berries. The Food Production Administration and the War Production Board have organized a working committee to scrutinize appeals and favorable consideration will depend on the importance of the crop and the availability of substitute insecticides.

Pyrethrum

Pyrethrum also comes from distant sources, particularly from Kenya, West Africa. It is well to emphasize that our supplies have not fallen off appreciably. The difficulty insofar as agriculture is concerned is that the War Department is now the principal claimant although in peace time our armed forces consume negligible quantities of pyrethrum. It is well to recognize that pyrethrum is indispensable to our soldiers in controlling malaria and typhus. Consequently, the bulk of our pyrethrum is reserved for war purposes and only a limited quantity is available for agriculture. In order to conserve the available supplies of pyrethrum for the most important agricultural uses, the allotment to agriculture will be allocated to specific crops and uses in accordance with the provisions of a new F.P.O order.

Nicotine

Thanks to the foresight of the Department of Agriculture our supplies of nicotine insecticides are ample. The U. S. Department of Agriculture, during the fiscal year 1941-43, arranged for the production of about 1,800,000 pounds of nicotine sulfate through a tobacco diversion program. This, added to the quantity ordinarily obtained from tobacco wastes, should to a large extent supplement our supplies of organic insecticides. It is appropriate to remember that American farmers and gardeners have used nicotine insecticides about half a century and are familiar with their use. It is reported that nicotine compounds will be used in conjunction with other economic poisons in the manufacture of mixed dusts which may find wide acceptance for home gardens.

Organic Thiocyanates

Certain organic thiocyanates have come into general use in sprays of the household and cattle spray type where they are used alone or to extend or increase the toxicity of pyrethrum or rotenone. They have also been used to combat insect pests of vegetable crops. Within the last 2 or 3 years tests have been made to determine their value in increasing the toxicity of pyrethrum or rotenone dusts in the control of certain insects, principally the pea aphid, cabbage worm and Mexican bean beetle. The evidence as to the value of adding organic thiocyanates to dusts is conflicting, some workers obtaining increased toxicity while other workers indicate no increase in toxicity of the mixed dusts, but rather a definite loss of toxicity in mixtures prepared for several months. They have also obtained injury to some plants from the thiocyanate-rotenone dust mixtures. Unquestionably, there will be a tremendous increase in the production and use of organic thiocyanates to control insects.

Arsenic

The supply of arsenicals will be limited by the amount of arsenic that can be made available. Every effort is being made to (1) bring in marginal production, (2) utilize wastes, and (3) import crude material. It is

believed that the supply of arsenicals for insecticides will be at least as great as any previous year despite the requirements of the Chemical Warfare Service. In order to provide the necessary insurance, the sale of arsenical insecticides for use on lawns, trees and ornamentals is being controlled so that enough will be available for the control of insects on foods and fibers. It is expected that the supply of lead arsenate will be equal to that used in 1942 for purposes other than luxury uses such as shade trees, lawns and ornamentals.

The supply of calcium arsenate will be the greatest ever. Although it is ordinarily difficult to predict the demand for this insecticide, it is reasonably certain that increased cotton acreage, coupled with the requirements of crop insurance, will make the demand heavy.

Cryolite

Cryolite has been used extensively in the past for the control of the sugar cane borer, the tomato pin worm, the lima bean pod borer, and for the control of caterpillars on lima beans and snap beans. It is also used as a partial substitute for rotenone on a number of crops.

Our supplies of cryolite will be much greater than ever before. It appears that we will have approximately 15,000,000 pounds of insecticide quality cryolite this year compared with only 6,000,000 pounds during 1942. This is fortunate in the light of the great need for arsenicals.

Cryolite can be used advantageously on shade trees and ornamentals, for the control of the coddling moth on apples and pears, and as a partial substitute for arsenicals in combatting many insects.

Barium Fluosilicate

The use of barium fluosilicate will be greatly increased this year. Fluosilic acid has become available as a by-product of superphosphate production and supplies are relatively easy.

Copper Fungicides

Copper fungicides should be available in quantities to meet the genuine needs of both commercial crops and Victory Gardens. Copper is one of our most important strategic materials and allocations for the production of fungicides are made only after agriculture's requirements are carefully scrutinized. It is to be emphasized, therefore, that although the supply of copper compounds will be the largest in history, every effort must be made to conserve supplies.

Potatoes, tomatoes, and fruit trees will consume about 75,000,000 pounds of copper sulfate. Considering the need of these foods in our civilian and military diet, it is clear that every reasonable effort should be made to reduce to a minimum the crop losses caused by plant diseases.

Conservation

It cannot be emphasized too strongly that farmers should make every effort to conserve supplies of sprays and dusts. Farmers are familiar with the general methods of conservation such as (1) choosing the proper time of application, (2) lowering the concentration of the insecticide, (3) using less dust or spray per acre, and (4) reducing the number of applications.

The Food Production Administration is not suggesting that unnecessary risks be taken, but it does strongly recommend that any wasteful practice be eliminated. Wars are fought with chemicals. We must not waste them.

Distribution Plans

Few farmers realize the amount of work that has been done by industry advisory committees, the War Production Board, the Bureau of Entomology and Plant Quarantine, and the Food Production Administration, in planning programs for the orderly production and distribution of insecticides and fungicides. It should be emphasized that the present over-all satisfactory supply situation is to be traced to plans and activities initiated one or two years ago. Through the foresight of leaders of the insecticide and fungicide industry and government, the situation on insecticides now appears hopeful if not entirely satisfactory.

With respect to a number of insecticides, detailed production schedules for each plant have been worked out so as to insure adequate supplies of each type of certain types of insecticides. Furthermore, plans for distribution are based on maintaining considerable flexibility in order to meet critical insect infestations wherever they may occur. In the case of calcium arsenate about 50% of our anticipated requirements are being delivered in advance of season according to the usual pattern of distribution; 25% is being held by producers in their own warehouses; and the final 25% which represents projected current production will be delivered in accordance with needs as reported by field representatives of the Bureau of Entomology and Plant Quarantine so as to provide maximum protection of our cotton crop.

Distribution Problems

One of the big problems that confronts the Food Production Administration is to arrange for the production of millions of small packages of useful insecticides to take care of our Victory Garden Program. Very few gardeners have thus far given consideration to the bugs and pests which will attack their crops which they are now planning to grow. In all probability, there will be a rush for insecticides after the crops have become infested, and for this reason, it is important that dealers throughout the country have a large supply of insecticides on hand ready for immediate distribution.

Another problem which gives the Department of Agriculture much concern is the distribution of rotenone and pyrethrum to those areas where they are needed and permitted in accordance with existing conservation orders. A substantial part of available supplies may be located in areas where restricted

crops are grown and it will be necessary to arrange for the transfer of such supplies to the areas where permitted crops are grown. These problems are complicated because of advance purchases for use on crops which recently have been considered as less essential and are not included in the list of permitted crops. Finally, there is the difficulty in arranging for a nationwide transfer of materials in accordance with provisions of maximum price regulations.

Thus far, because of elaborate and detailed plans made by the Food Production Administration, war offices and industry, farmers have been able to get the necessary chemicals to protect their crops. Distribution has been effected through our normal channels without recourse to consumer rationing. The system has functioned well. The absence of publicity is perhaps the best evidence of the fine work that has been done by those responsible for these agricultural supplies.

Farmers should not, however, take too much for granted. The chemicals used in waging war on insects are also used in mortal combat on battlefields. The fact that dusts and sprays are available is due to the foresight and activities of groups and individuals who long ago planned increased production because they recognized the legitimacy and importance of agriculture's needs.

Chemicals Division
March 29, 1943

